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INTRODUCTION OF THE
MOST APPROVED EUROPEAN METHODS
OF USING SULPHUR WATER AT
SHARON SPRINGS, N. Y.

FOR TREATMENT
OF
NASAL CATARRH

AND
DISEASES OF THE RESPIRATORY ORGANS

WITH TRANSLATIONS
FROM THE NOTES OF FRENCH PHYSICIANS ON THESE METHODS
AND THE RESULTS, AS OBSERVED IN FRANCE

Sharon



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NEW-YORK
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1885

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MOST APPROVED EUROPEAN METHODS
OF USING SPRING WATER AT
SHARON SPRINGS, N. Y.
FOR TREATMENT
OF
NASAL CATARRH

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NOTE.

A "MONOGRAPH ON SULPHUR WATERS OF SHARON SPRINGS, N. Y.," by GEO. E. WALTON, M. D. (author of "The Mineral Springs of the United States and Canada"), and an "ILLUSTRATED DESCRIPTIVE PAMPHLET OF SHARON SPRINGS," will be mailed on application.



INTRODUCTORY AND DESCRIPTIVE.

IN the autumn of 1883, our attention was attracted by a paragraph in the society news of the "London World," in which it was stated that "many of the actors, actresses, and singers of France annually visit Aix-les-Bains for the benefit of their throats in the INHALATION ROOMS." The statement made a forcible impression upon us, for the reason that the persons referred to are those who cannot venture to trifle with the throat because their professional success, and, indeed, their livelihood, are dependent upon the healthful condition of this organ, and therefore we inferred that there must be something substantially good in this method of applying a natural Sulphur Water. It seemed to us that, if European experience had apparently demonstrated the utility of Sulphur Water in Catarrh and various diseases of the respiratory organs, the subject was worthy of investigation; and we felt that, if inquiry and examination should confirm the alleged value of the treatment, we should benefit both ourselves and the public by introducing the system into this country, and thus enlarge the scope and usefulness of Sulphur Water. For if, in addition to the diseases for which this mineral water has always been esteemed on this continent, it could also be so applied as to prove beneficial in Catarrhal and Bronchial difficulties, it would certainly be most desirable to place such methods

6 *Methods of Using Sulphur Water.*

within the reach of those sufferers who might not be able to devote either the time or the money required to seek relief in other lands.

Influenced by these considerations, a member of our firm forthwith visited Europe for the express purpose of making the necessary inquiries. He found that at almost every Sulphur Spring in France apartments are provided for the use of the water by inhalation and pulverization. The scale upon which this has been done, the evident expenditure involved in perfecting the system, and the numbers who availed themselves of the treatment, all indicated a confidence in the intrinsic value of these methods of therapeutics that could not be ignored.

Accepting this indubitable evidence of popular faith in the Sulphur Water Inhalation as the result of its established efficacy (as proven after an experience in its use in Europe during a period of twenty-five years), we reasoned that the same system ought to prove valuable if carefully developed in the United States; and therefore we have equipped in our Sulphur-bath houses at Sharon Springs, N. Y., apartments devoted to Inhalation and Pulverization. In the choice of methods we enjoyed the valuable assistance of Dr. Blanc, Government Inspector of the Sulphur Baths at Aix-les-Bains, Savoy, France, whom we consulted in Paris; and we have selected those which have received the highest approval of the first bath physicians in Europe. In France there are three methods employed, viz.: inhalation of water atomized by steam; inhalation of water atomized by compressed air; and inhalation simply of the natural gases mechanically eliminated from the mineral water. Each of these has its advocates; we have introduced all three systems into our establishment, so that the invalid can exercise his own or his physician's judgment in selecting that which is best adapted to his case.

We have in operation three rooms: "DRY INHALATION," "PULVERIZATION," and "INHALATION."

The "DRY, or GAS INHALATION," is the mode followed at Allevard, Savoy, France, where there are seven large rooms devoted to this system, which are patronized by from 300 to 400

invalids daily during the season. In this room the Sulphur Water, at the natural temperature of the spring, is discharged from a small jet against the concave surface of a glass cylinder, whence it drops into a shallow basin, from which it drips into several basins successively larger as they approach the floor. By this method the water is exposed to the surrounding air in drops, thus quickly eliminating its gases, and the room, which is kept closed, is filled with disengaged gas. Into this room, and the air thus charged, the invalid enters, without change of clothing, and remains, breathing the naturally medicated air, for such length of time as a physician may prescribe. This method is also in use at Marlioz, near Aix-les-Bains, and patients avail themselves of it in connection with the baths at the latter place. These gas inhalations at the places named are highly esteemed, and are administered with great success in various difficulties of the respiratory organs.

The "PULVERIZATION ROOM" is an apartment where the pure Sulphur Water is atomized by steam or by compressed air, or by both, after the fashion of the most scientific small steam atomizers, or air-compressors. The air of this room becomes saturated with the pulverized Sulphur Water, like a fog or mist, and invalids, upon entering, protect their clothing with a rubber cloak and hood. The application is moist, instead of dry, as in the other room. This method is employed at almost every European Sulphur Spring, and more particularly at those where the water is not highly charged with gas. It is efficacious in the various catarrhal disturbances of the throat, nose, etc.

The "INHALATION ROOM" is a chamber in which the Sulphur Water is atomized either by compressed air or by steam, for direct application to the throat or nose, without saturating the air of the room. Small rubber tubes carry the air to small tables in various parts of the apartment. These tables are provided with standards to hold the ends of the tubes, into which are inserted glass atomizers. The invalid sits in front of a table, with a glass face-shield in hand; the attendant turns a cock, and Sulphur Water, Pine Needle Extract and Sulphur Water, or any

desired combination with Sulphur Water, is applied in an atomized state directly to the affected part.

We have also in readiness various kinds of DOUCHES, much esteemed abroad, by means of which the Sulphur Water may be applied, in solid stream or shower, to any part of the body. The DOUCHES are of three kinds: *ascending*, *descending*, and *lateral*, and their temperature may be *cold*, *tepid*, or *hot*, at the option of the bather.

In addition, we have fitted up, in communication with some of the ordinary tub bath-rooms, private dressing-rooms furnished with a comfortable bed, on which the bather may repose immediately after the bath, and thus, without risk of catching cold, secure that profuse perspiration which is essential in the treatment of certain diseases.

The first introduction into the United States of these scientific applications of *Natural* Sulphur Water was made by us in our Sulphur-bath houses in 1884, and it met with unqualified success. In Europe, the general confidence in these various methods of treatment is evinced by the increased facilities that are constantly being made for their employment. They have the merit of rendering the Sulphur Water accessible (in the ordinary complaints for which it is sought) to those who, from various complications and causes, cannot avail themselves of it in the tub bath, as many such can, with perfect security and great advantage, use the Pulverization or Inhalation process. But particular attention is directed to the fact that they offer relief or cure in the various Catarrhal diseases, and complications arising therefrom, that are so prevalent in the United States. Of their ultimate success here, assured as it is abroad, we have no doubt. In thus adopting and developing these scientific methods of using Sulphur Water, we purpose to establish the fact that no person need cross the sea to obtain any application of a natural Sulphur Water because it cannot be found at Sharon Springs.

Although these methods are now attracting the attention of physicians in this country, there is, owing to their very recent introduction here, but little American literature bearing directly

upon the subject.* ' The notes and observations of French physicians on the treatment and its results are voluminous; from them we have made certain selections, which we have roughly translated, and which we offer herewith in the hope that they may prove both interesting and valuable to those persons who may desire to avail themselves of the applications described.

JOHN H. GARDNER & SONS,

Sharon Springs, N. Y.

* We are pleased to note that, in a work entitled "NASAL CATARRH AND ALLIED DISEASES," by BEVERLEY ROBINSON, A. M., M. D. (second edition, Wm. Wood & Co., 1885), commendatory allusion is made to the employment of these applications and to their value in certain catarrhal difficulties.

OPEN FROM JUNE TO OCTOBER.





[*From the French.*]

PROOF OF PENETRATION.

THE penetration of solid dusts into the lungs is above all remarkable when it is favored by certain, well-understood conditions. While in the normal state, the ordinary condition of the respiratory functions, pulverable bodies can only pass the orifice of the glottis in insignificant quantities; with workmen who have the habit of speaking loud, of singing, of shouting, of breathing noisily, the introduction of dust into the lungs is much more to be dreaded. It is the same with pulverized liquids which, with certain precautions well defined, easily penetrate into the trachea and bronchial tubes, as my affirmative experience demonstrates. We will mention the most conclusive experiments:

1. M. Réveil subjected, during ten minutes, a rabbit to the action of a solution of perchloride of iron pulverized, the mouth of the animal being held open with pincers. The rabbit was killed, and with a solution of ferro-cyanide of potassium, a blue discoloration was observed in the larynx, the trachea, and the bronchial tubes. The same experiment was made with a filtered solution of starch, and, by means of iodine water slightly acidulated, a blue tinge was traced to the uttermost ramifications of the bronchial tubes. It is known that the solution of starch cannot

be absorbed, and the objection that could be made to ferro-cyanide cannot apply to this starchy liquid, which penetrates directly into the air passages.

2. M. Demarquay caused an inmate of the Beaujon Hospital, who had submitted to tracheotomy, and wore a canula, to breathe powdered tannin; a paper of perchloride of iron introduced into the trachea, hermetically closed, soon became black after several inspirations of the patient who was experimented upon.

3. Dr. Tavernier, assisted by Dr. Gratiolet, inhaled two atomized liquids supplied by apparatus containing, one the acid solution of persulphate of iron, the other a solution of ferro-cyanide of potassium. By means of the laryngoscope he proved that the part of the larynx on both sides of the vocal cords was covered with Prussian blue.

Experience so positive and so conclusive cannot leave the least doubt in the mind, and we must regard the fact of the penetration of atomized liquids into the bronchial tubes as acquired for science.





[*From the French.*]

CATARRHAL AFFECTIONS.

THE sympathetic action that is exerted between the skin and the mucous membranes deserves most serious consideration on the part of the physician, because it plays a rôle of the first importance in the production of the diseases of these membranes, as well as in their development, and in the method of treatment that is applicable to them.

Why should it not be thus, since the mucous membranes are only, so to speak, the continuation of the cutaneous organ reflected in all the cavities which open on the surface of the body, and which are lined by the mucous membranes in their entire length?

When that portion of the cutaneous organism which forms the exterior surface of the body ceases to perform its functions, or when it is only modified in its physiological state, under the influence of cold, for example, that which lines the cavities of the body becomes sympathetically more active; its capillary blood system passes into a state of turgescence, which, if prolonged, degenerates into a veritable inflammation. It is thus that the chilling of the skin, the suppression of perspiration, very promptly cause inflammation of the mucous membranes.

Of all these membranes, none is found to be more influenced than that of the air passages by the changes to which the skin is exposed. Who does not know that *Coryza*, *Pharyngitis*, and *Bronchitis* are the most ordinary effects of chilling the skin? The sympathy, which gives rise to this reaction of the skin resulting in the production of local inflammation of the mucous membranes, is also found acting in an analogous manner when one applies to this exterior covering of the body any substance which changes its physiological action. It is thus that every irritation of the skin caused by the application of a revulsive tends to diminish to a certain extent the inflammatory state of the mucous membranes, and particularly of the pulmonary mucous membrane, which, observation has taught us, corresponds most directly with the skin.

Why, then, can we not understand that the thermal use of Sulphur Waters, a treatment which exercises so powerful an effect upon the skin, may have a similar effect on the pulmonary mucous membrane? This particular membrane, independently of the fact already demonstrated that it is more sympathetic with the skin than other analogous membranes, is also more directly influenced by the sulphurous vapors which invalids breathe during the thermal treatment.

Catarrhal affections of the mucous membranes rarely constitute simple morbid conditions; they are often connected with complex constitutional diseases; but whatever may be their nature,—*rheumatic*, *scrofulous*, or *herpetic*,—the sulphurous treatment is equally indicated; only the method varies. *Rheumatic catarrh*, *muco-albuminous catarrh*, *puriform with swelling of the mucous membrane*, *granular from scrofula*, *erythematic inflammatory catarrh*,—all derive benefit from Sulphur Waters. Hence it is of great importance that the physician should ascertain what has been the cause of the catarrhal affection, and what its nature is. This examination should be considered most imperative; and I have often had cause to congratulate myself that, on the arrival of each invalid at the establishment, I have not failed to make a minute inquiry into his previous life and actions. I inquire as to former habits, the diseases he has suf-

ferred from, the kind of work that he has done, and the physiological antecedents of his family. It is seldom that this examination, renewed several times, does not give me the clew to the principal cause, which, without this, would be unknown to me. Once understanding the cause, and the temperament and constitution of the invalid, I prescribe the treatment that should be followed.

Chronic catarrhal affections may be allied to three principal predisposing causes: *rheumatic*, *scrofulous*, and *herpetic* diathesis, each giving rise to different and characteristic expectoration; thus, *rheumatic* catarrh produces a sero-mucous secretion, which follows violent coughing, and becomes humid only at the end of the cough. Catarrh arising from, or connected with, *scrofula*, causes a secretion muco-albuminous and puriform, with granular swelling of the glands, which is characteristic of *scrofula*, and is observed in *granular pharyngitis*.

Catarrh due to *herpetic* diathesis is distinguished by a dry inflammation of the mucous membrane, or sometimes by inflammation of the follicles of the mucous membrane, accompanied by a glairy secretion. In these different catarrhs the indication of Sulphur Waters is the same, and herein is their special utility, their veritable triumph, only the mode of administration varies, as we shall see.

"Rheumatic pulmonary catarrh," says M. Astrée, "can be treated with advantage in various thermal establishments where rheumatism is cured, whatever may be the nature of the water; but success will be more certain and more rapid by using a Sulphur Water, on account of the *hypercrinique* effect, entirely special, of the sulphur on the skin and the bronchial mucous membrane." The double action, stimulating and alterative, of Sulphur Water makes it, to a certain degree, a physiological and therapeutical specific, which acts both on the surface of the skin and on all the mucous membranes, not only during the thermal treatment, but for a long time after one has ceased to use the baths, douches, inhalations, etc. Thus, to combat this form of catarrh, the water should be taken internally by drinking, and the baths should be warm; the baths and douches, by provoking a

strong diversion on the skin, and by causing abundant perspiration, will displace the inflammation; and if this derivative treatment is accompanied by prolonged sojourn in the inhalation room, where the vapors act directly on the diseased mucous membrane, we readily perceive that very good results must follow.

Chronic catarrh, due to a *scrofulous* diathesis, requires a different treatment. The baths should be more prolonged and the douches frequent, without being followed by profuse perspiration. The invalid should sojourn, by preference, in the gas inhalation room. In these cases of *granular pharyngitis*, the invalid finds benefit in the use of tepid douches at first, and afterward of cold ones, applied directly on the pharyngeal mucous membrane. The action of these direct local douches is aided by the diversion which is produced by warm douches administered on the nape of the neck and around the neck. This treatment has the effect of diminishing the granulations, and then the swelling of the mucous membrane. For this the thermal treatment requires at least a sojourn of one month at the Springs. These injections succeed equally well with children suffering from *chronic pharyngitis* with enlargement of the tonsils. Every year we have a large number of these children, who are rapidly cured under the influence of this treatment. *Chronic pulmonary catarrh*, with herpetic diathesis, is much more frequent than is ordinarily supposed. How often I have seen *eczema*, *psoriasis*, *impetigo*, even *lichen*, appear unexpectedly on invalids when the thermal treatment has brought out a strong eruption. Questioned by me, they then admit that they have had, at some time, something on the skin which has disappeared; and thus in recalling the fact they remember that their cough dated from the disappearance of the *exanthema*.

In reading the numerous observations that I have collected, I am astonished at the frequent alternation of eruptions and catarrhs. These catarrhs are usually accompanied by a very abundant viscid secretion, strongly resembling a solution of gum-arabic, and following a dry, painful cough attended by frequent *dyspnœa*. In these cases, the follicles only of the mucous mem-

brane, which assumes the color of wine, are enlarged. It is in the nasal fossæ, the pharynx, the mouth, when the mucous membrane of these parts is attacked, that we can see this color and this hypertrophy, which are, for me, with the gummy secretion, the true characteristics of this catarrhal affection. These facts have led me to admit that, as the skin is the seat of darts and herpetic affections, so the mucous membranes may also be attacked in the same manner. Moreover, do we not often see on the surface of the body humid or dry eruptions existing at the same time that the invalids are complaining of dry coughs, dry asthmas, dry heats, and sensations of aridity in the breast? All these phenomena indicate, in the most positive manner, that herpetic affection may exist in the bronchial mucous membrane the same as it is seen on the cutaneous surface. Is it not in these cases that Sulphur Water, so powerful against cutaneous diseases, should be considered as a veritable specific, that acts upon the skin by the baths, and on the pulmonary mucous membrane by the inhalation of the sulphurous vapors and the other alterative principles carried in these vapors, which are absorbed by the mucous membrane, and pass rapidly into the circulation after having exercised upon that membrane a real topical effect? Bronchorrhœa, an affection essentially chronic, is most frequently connected with rheumatism and darts complaints.

Chronic catarrh is not always dependent upon a diathesis; it follows sometimes an acute inflammation which has left behind it an irritation of the mucous membrane with a too abundant secretion. This form of catarrh is still more easy to cure than the preceding.





[*From the French.*]

PHARYNGITIS.

PHARYNGITIS is a very common disease, and one against which medicine often fails to prevail; therefore, invalids seek the Sulphur Waters for a more efficacious medication. Why should they do otherwise, since we see this malady so often connected with herpetic diathesis, accompanying or following cutaneous diseases? The numerous cures that I have effected of this disease so rebellious, so refractory to medicine, justify me in mentioning here the method of treatment that I have so often employed with advantage.

In granular pharyngitis the mucous membrane takes the color of wine; it is swollen, and in spots its enlarged follicles raise up the surface, which then assumes an uneven and honey-combed appearance; the invalid experiences not only heat and smarting, but he has also a constant desire to expectorate, to rid himself of the glutinous secretions difficult to eliminate.

Drinking of the Sulphur Water is insufficient, but nevertheless it should not be neglected, because it has an alterative action, modifying the dartrous tendency, and, combined with the baths, gargarisms and douches, it should necessarily form a part of the sulphurous medication.

In fact, the bath prepares the cutaneous surface, modifies it, and corrects the secretions often perverted. The douche stimulates still more this organ, develops the capillary circulation, renders the secretions active, and causes a general movement, profound and complex; it impresses on the circulation the highest energy; it promotes an eliminatory perspiration.

But even this is not enough; we must join to it in the beginning the emollient and sedative action of the inhalations of the sulphuretted hydrogen combined with the vapors from the mineral water. All invalids suffering from pharyngitis experience during the sojourn in the inhalation room a great sense of comfort, which they express by saying that the inhalation of these vapors resembles a piece of velvet passed over the throat. After several days of this treatment, the mucous membrane becomes less sensitive, and the invalid can gargle first with tepid water, then with cold; and when the painful sensibility has disappeared, the patient receives, every morning and evening, directly on the pharynx, the throat douche, of which the force, temperature, and volume are regulated at will. The jet is very thin, weak, and tepid at first, but little by little the force and volume are increased and the temperature diminished. Under the influence of this treatment directed topically, the mucous membrane gradually loses its unhealthy discoloration, its surface becomes less wrinkled, the granulations disappear little by little, and the membrane becomes more smooth. The invalid then feels relief and comfort, and generally recovery is the result of this complex medication.





[*From the French.*]

CLINICAL.

SIMPLE PHARYNGITIS.

M. V— of Lyons, aged twenty-seven years, of a sanguine temperament, of a strong constitution, never having had venereal disease, has frequently had throat troubles which he treated in the ordinary manner by medicine. He has suffered from trouble in the throat during the winter; this difficulty first appeared at the end of a violent *quinsy* that he contracted in the month of November, eighteen months ago, and which he neglected. He felt continually the necessity of swallowing his saliva, and of expectorating *mucus* difficult to detach from the throat. He was obliged constantly to clear his throat from these glutinous matters. On his arrival I observed an active congestion of the mucous membrane of the pharynx, with swelling. He was directed to use the water internally by drinking. He took eight baths of an hour's duration each, a foot-bath every evening, and then he passed to the use of the general douche at a temperature of 118° Fahr., of which the jet was directed from time to time on the nape of the neck and around the neck. These douches were followed by abundant perspirations. In the afternoon he passed three-quarters of an hour in the inhalation room, and during the

day he often gargled his throat. He took three douches and then a bath. After eighteen days of this medication the injection douches were given directly on the mucous membrane of the pharynx for twenty minutes at 72° Fahr. Each day the duration of the local douches was increased, while at the same time the temperature was lowered.

Under the influence of this treatment, the mucous membrane of the pharynx lost, little by little, its discoloration; the secretion from the follicles decreased, the patient no longer felt the imperative desire to expel *mucus*, the membrane became smoother, and after thirty-two days of treatment the invalid left the establishment with so great an amelioration that in six weeks afterward he was completely cured.

GRANULAR PHARYNGITIS.

M. D—— of Bourges came for granular pharyngitis, accompanied with swelling of the tonsils. The child appeared rather pale, its temperament was slightly lymphatic, and its constitution, without being strong, was not what it should be at this epoch of life. The use of the water by drinking was prescribed in doses of from one to three glasses per day. He frequently gargled the throat with Sulphur Water, tepid at first and then at a lower temperature, 61° Fahr. He was submitted to the use of the warm baths and to douches slightly warm, in order to render active the functions of the skin, which was not acting in a natural manner, and to impress upon his entire organization a profound modification. After twelve days of this medication the little invalid already experienced improvement. The mucous membrane was less red, the secretion from the pharynx more easy and less frequent. While continuing the same treatment, he spent forty minutes every morning in the inhalation room, and every afternoon while his legs were bathed he received on the mucous membrane of the pharynx a local douche, tepid at first and with a gentle jet, but of which the temperature was lowered each day progressively, while the volume and force were increased. This treatment was continued one month, after which the child

returned to his home with very evident improvement. The cure was complete two months afterward. The winter and spring passed without his suffering any relapse. His mother brought him back the next year, in order to make certain of his entire cure. On his arrival I found that the mucous membrane had resumed its form and natural appearance, and the tonsils had almost retaken their normal size.

CHRONIC BRONCHIAL CATARRH.

M. —, a physician, of lymphatic temperament, of delicate constitution, aged thirty-six years, has had catarrhal fever. The cough has continued and increased during the winter, accompanied with abundant and thick expectoration. He has become thin and lost strength.

In the month of July he arrived, and followed a complete course of treatment, during which he used the cold gas inhalation conjointly with the other balneatory methods. He left with me his observations, which I transcribe here.

July 12.— During the first ten minutes in the inhalation room, bitterness in the mouth, slight styptic sensation in the pharynx, gentle heat in the interior of the chest, slight desire to cough, heaviness in the head, phenomena which disappeared little by little.

July 13.— Sojourn of half an hour; same phenomena as the day before; abundant expectoration with odor of sulphur.

July 14.— Sojourn of three-quarters of an hour; no trouble in the head; bitterness in mouth; sensation of gentle heat in the breast; expectoration abundant, with odor of sulphur; expectoration alkaline; presence of sulphur in expectoration.

July 15 and 16.— Sojourn of one hour; same phenomena; expectoration very abundant; cough a little dry.

July 17 and 18.— Same length of time in inhalation room; slight annoyance in breathing; sensation of internal heat; constricted feeling in throat; less expectoration, and less thick.

July 19 and 20.— Repose from all treatment; slight fever; appearance of an eruption in the form of *urticaria*.

July 21 and 22.— Less fever; eruption is developed; sojourn of half an hour only in the gas-inhalation room.

July 23 and 24.— Began again the thermal treatment; expectoration returns, but less thick; less annoyance in breathing; more fever.

July 25 and 26.— Inhalation of forty-five minutes, by séances of ten minutes each; less cough; less expectoration; sleep as well as appetite returns.

July 27, 28, 29.— Same phenomena.

From July 30 to August 16, the day of his departure, the cough continued to diminish, expectoration decreased and became acid; he found himself much improved.

“From this observation,” says the doctor, “I conclude that the action of the sulphuretted hydrogen, when breathed, results in first causing a slight disturbance in the brain, which disappears very quickly, and after a few days does not return; that the inhalation of the gas produces a marked sedative effect on the pulmonary mucous membrane, a slight sensation of heat in the chest which causes a gentle stimulation that has the effect of modifying the chronic inflammation of the mucous membranes, and consequently the secretions they supply, and at last of curing them.”





[From the French.]

GENERAL DIRECTIONS.

THE invalid seats himself before the table in front of the apparatus, and receives the pulverized mineral liquid on the diseased organ, nasal fossæ, eyes, mouth, throat. It is not possible to indicate general rules as to the method in which one should take the pulverization, as it varies with each invalid. It is for the physician to instruct the bather on the manual method, and to fix the duration of the inhalation process. While some invalids who wish to derive benefit from the atomized water for *chronic coryza*, *ulceration of the buccal mucous membrane*, or *pityriasis of the face*, can support the inhalation for a period comparatively long, those who would have the respiratory organs affected should content themselves with short séances; the pulverized water should not be inhaled before the apparatus during more than fifteen minutes, and then by several renewals of two or three minutes each. The duration that we fix does not apply evidently to the sojourn in the inhalation room, where one remains ordinarily three-quarters of an hour; it represents only the time that the pulverization should be practiced, which may be divided and separated by variable intervals of repose adapted to the patience and strength of the patient.

What are the conditions under which the subject should be placed who inhales the atomized water? What are the precautions that should be taken to facilitate the penetration of the pulverized liquid into the air passages? The invalid should breathe only through the mouth wide open, should carry the head forward, and project as much as he can the tongue below and outside; he will notably facilitate the introduction of the aqueous dust by raising the soft palate, and enlarging the space which separates the free margin of the epiglottis and aryæno-epiglottic folds of the posterior wall of the pharynx. If the subject breathes by the mouth and by the nose at the same time, the penetration of the atomized water will be imperfect, for then the nasal respiration prevents the soft palate from rising; the column of air rushes against this obstacle, and can only pass in part into the narrow space which separates the base of the tongue from the pharynx. As invalids generally find great difficulty in changing their ordinary habit and in breathing through the mouth only, we have had some idea of making an obturator, to prevent the passage of air into the nasal fossæ while the inhalation is being received.

In carrying the head forward, and in thrusting the tongue outside, one effaces the promontory formed by the base of the tongue, which becomes a groove slightly inclined downward and backward; the epiglottis is drawn forward, and to a certain degree the space is enlarged which separates the free edge of the epiglottis from the posterior wall of the pharynx. The atomized water, when it reaches the larynx, does not stop either on the superior vocal cords or on the anterior angle of the tongue; it passes the obstacle presented by the inferior vocal cords, which are slightly stretched and effaced in the position that the larynx has taken. The pulverized liquid thus penetrates into the trachea and bronchial tubes.

The invalid should always force himself to make profound and frequent inspirations. The introduction of the atomized water into the air passages will thus be facilitated. Besides, Piorry has demonstrated the utility and the beneficial power of great respiratory movements. This hygienic practice, these pulmonary

gymnastics, should, therefore, always be recommended to invalids who take the pulverization; their action will add to the local and general effect of the water.

The pulverized water, when it arrives in the air passages, has an action much more powerful, because it possesses that increase of curative activity that a minute division of medicinal substances ordinarily gives. The remedy being put in direct relation with the disease by the pulverization, a real topical treatment is established which is entirely analogous to the dressing of a wound; the atomized water acts as a balm on the ulcerated and on the inflamed part.

We never advise an invalid to go to the pulverization room immediately after leaving a warm bath; we suggest always that at least one hour should intervene between the two treatments.

Some persons bear the inhalation one hour, or two, the first day; others in beginning cannot remain in it five minutes; some ordinarily pass two or three hours each day in the apartment. Sulphuretted hydrogen would not be absorbed in large doses without inconvenience; it is at least useless to prolong it to toxic effect. I prescribe five minutes in the beginning, sometimes one or two; in order to apply usefully and surely the gas-inhalation, it is necessary to know that short séances often calm the cough, the agitation, the nervous state, the palpitation; that they cause the pulse to decrease; while in prolonging them one accelerates the circulation, brings back the pain, the irritation of the bronchial tubes, oppression and congestion.





[*From the French.*]

DOUCHES.

THE Douche is one of the forms under which mineral water is most often and most usefully employed. The method of its action is sometimes direct stimulation, sometimes revulsion; its power is in proportion to its volume, its temperature, the nature of the water, and the force of percussion determined by the height of its fall. It is employed as a direct stimulant in a large number of cases. Such are indolent enlargement of the glands, swellings of the articulate tissues where there are no more pain and no marked sensibility, chronic rheumatism fixed at some superficial determinate point. One can then attack them without fear, as we see it done for rheumatic pains in the head, which readily yield to douches on that part. But if the rheumatism is changeable, and above all, if it has a tendency to move toward the viscera, there would be danger of driving it within. It is then prudent to begin with the baths, and at a later period to employ the other means indicated. Directed on the vertebral column in all its length, the douche is wonderfully suited to young persons suffering from general debility, or more particularly from weakness of the lower members from incipient *tabes mesenterica*, or any other cause. Moreover, it is necessary to change lightly and successively the points of percussion, to expose turn by turn

the suffering parts, with precaution, always, never to apply the douche to that where too great sensibility is developed. Besides its direct stimulating action which is immediately transmitted to the stricken part, as we can see by the quick coloring of the skin, the douche can exercise, by reason of this same stimulation, a powerful reactionary effect. It is employed with advantage concurrently with half-baths and foot-baths in order to change the course of the blood, and to recall it to the extremities; then the douche is applied to the feet and legs. This method contributes powerfully to dissipate the habitual sensation of cold of which many pallid women complain, who are of feeble constitution, subject to internal concentrations and to irregular and suppressed menstruation. In this last difficulty the douche, alternately directed on the legs and on the loins, becomes one of the best methods of reëstablishing the epochs. Never should its action be carried directly on a parenchymatous organ too immediately adjacent to the skin, such as the liver, for example, or on a part where the concussion might fatigue or irritate, as the breast. If it is thought advisable to use it, it is then necessary to reduce its volume, its duration, and to advise that the shock be received only in an oblique line.

The duration of the douche should not be prolonged to the extent desired by many invalids, and as we sometimes see it employed; in general, fifteen or twenty minutes will be enough. Douches too long continued may end by provoking an intense, universal excitement, which may oblige one to interrupt the treatment, a thing always to be avoided. The peasants generally have a sufficiently strong organization; however, it often happens that this method of treatment fatigues them, and they cannot bear it. I have seen, for example, some of them obliged to abandon the douches because convulsive movements, for which they were trying them, had evidently been increased after two or three days of treatment. It is prudent, therefore,—experience demonstrates it,—not to pass the medium limit indicated, even when the douche is directed on parts distant from each other; since, in fact, it is always the same total of stimulation, bearing on the same organic whole.

The douche is generally taken before the bath, because in coming out of the latter it is not desirable to expose the uncovered body to the contact of the air. Occasionally, nevertheless, it is taken at the end of the bath, but without leaving the bath; then it should be received on the parts which are not immersed in the water, as the neck, for example, and those parts which might become chilled during the bath.

We vary at will the volume of the douche, governed by the susceptibility of the parts and of the invalid. Habitually, the jet is the size of the finger; it is easy to diminish it, either by partially closing the cock or by using spouts of smaller caliber, or even by substituting, if there is necessity, a watering-pot nozzle, from which the water issues like rain.

The ascending douches are used where it is requisite to reach portions of the body on which it would be impossible to direct the descending douches. Such are the arm-pit and the perinæum, on which latter this method is often employed in cases of disease of the bladder, enlargement of prostate, chronic urethritis, etc. Finally, the douche is also used internally in certain affections, catarrh of the uterus, for example. The apparatus is then arranged in a particular manner; the diameter of the column of water is less than in the preceding cases, and its action is continued only during a few minutes. Moreover, on whatever part the douche is carried, it is always well that the invalid should be wrapped in a woollen *peignoir*, in order to protect him from being chilled either by contact with the air or by the splashing of the water.

The douche administered with precaution constitutes one of the most energetic methods against a host of local affections; taken on the entire surface of the body, it is a sudorific more powerful than the baths. The percussion and shock that it occasions diffuse themselves into the depth of the tissues, change the method of vitality, and awake a new activity which is transmitted to the internal organs and give rise to favorable reactions. Whenever one wishes to stimulate vital action at a particular

point, or to cause a chronic inflammation to pass into an acute state, one is certain to obtain the effect by directing the douche on the part indicated. We have recourse to it with success in *atony, and in partial laxity in incomplete anchylosis, in contractions of the limbs, gêne, stiffness of the joints, chronic rheumatism, sciatica, lumbago, weakness and local paralysis, indolent swellings, white tumors without inflammatory complications, and circumscribed and rebellious eruptions.* The douche is employed with a very fine jet in eruptions on the face, and in chronic inflammation of the eyelids. It is directed on the spine in paralysis of the limbs and in diseases of the genital organs, and chiefly in general debility, the exhaustion which follows vicious habits or the excess of certain pleasures. In this last case the douche often restores vigor dissipated before manhood. Directed on the loins, the hypogastrium, the thighs, and the perinæum, it is one of the most powerful means of reëstablishing either the menstrual or the hemorrhoidal flow.

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NATURAL SULPHUR WATERS, AND THEIR THERAPEUTICAL APPLICATION.

BY HOWARD PINKNEY, M. D., NEW-YORK.

DURING two summers spent in Europe visiting a few of the most noted spas, my attention was attracted to the large proportion of Americans there seeking relief for various ailments. I inquired of many why they came so far; also if they had ever tested the virtues of American springs. The usual answer was that "they had come by the advice of their physician," and that,

with few exceptions, "they had never visited for treatment any springs at home." I have conversed with many of our eminent physicians and surgeons, and find that while they are quite familiar with the properties of European medicinal waters, they have paid but little attention to those in this country. Dr. Walton, in his work on the mineral springs in the United States and Canada, describes over one hundred and ninety sulphur springs in the United States; and Dr. Glover describes thirty sulphurous or sulphuretted spas in Europe. In comparing the analyses of these different sulphurous springs, it will be found that all so-called springs contain certain ingredients in common, and differ mainly as to the proportion of these ingredients in each, and the temperature of the water as it issues from the sources. In order to satisfy myself as to some of the therapeutic effects of sulphurous waters, I spent three months at Sharon Springs. While there I had the good fortune to watch its effects in the following diseases, viz.: Rheumatism and gout, acute and chronic; eczema, psoriasis, naso-pharyngeal catarrh, catarrhal inflammation of the Eustachian tube, causing deafness; and one case of hemiplegia. In all the cases of rheumatism and gout seen before commencing the use of the waters, the secretions, viz., urine, perspiration, and saliva, were excessively acid. After taking the baths and drinking the waters for a week or ten days, I found the secretions much less acid; after the fourth week of their use, in many cases little or no acid showed by the blue litmus-paper test. In the cases of eczema the same result was shown. In one of two cases of psoriasis the eruption disappeared entirely after one course of baths. In the other, who only took the baths, etc., for two weeks, no improvement was perceptible. In the case of hemiplegia, where the baths and water were used most faithfully, I could detect no improvement in the paralyzed parts, although the general health and appetite improved.

As sulphuretted hydrogen gas is so freely generated in the bowels and expelled by the rectum, I at first thought that its introduction into the stomach, especially in cases of dyspepsia, would be injurious. I therefore advised that the water should be at first heated, in order to throw off the free sulphuretted

hydrogen before being drunk; but, as many visitors who for years had been in the habit of coming to Sharon informed me that whenever they had dyspepsia symptoms,—especially acid stomach,—they always found relief by taking a glass of the sulphur water as it came from the spring, I could not doubt their testimony, and the following questions suggested themselves: Does Sulphur Water prevent fermentation outside the body? If so, does it have the same effect in the stomach? To solve the first question, I made the following experiment: Taking two glass test-tubes of equal size, I partly filled one with Sulphur Water taken directly from the Spring. In the other I placed an equal amount of rain water. To each I added an equal amount of ferment, composed of molasses and baker's yeast, corked and labeled each, and set them aside in a warm place.

On the following day, when I examined them, I found that the cork in the test-tube containing the rain water had been forced out, and that the fluid in the tube was turbid and covered with a luxuriant growth of yeast plant. The other tube, containing the ferment and sulphur, appeared the same as when I set it aside—the cork was firmly in the tube, and no growth appeared on the surface of the liquid. I repeated this experiment with tank water and the water used at the table for drinking, with like results—the Sulphur Water always arresting fermentation. I naturally came to the conclusion that if Sulphur Water prevented fermentation outside of the body, it might have the same effect in the stomach. Now, if this theory is correct, may not some similar change take place in the blood of rheumatic and gouty patients, and account for, in a measure, the marked improvement in such cases from the use of the waters?

As I was anxious to make some investigations as to the effect of sulphur-spray upon inflamed mucous surfaces, I had an excellent opportunity of doing so, and also the effect of breathing and inhaling an atmosphere highly charged with sulphuretted hydrogen. In connection with the baths are three inhaling rooms. In the first, the Sulphur Water is converted into a spray by means of compressed air, and so arranged that it can be applied directly to any part of the throat or nose. In the second

room, the water is converted into spray by steam, and completely fills the apartment. In the third room, the water, as it comes from the spring, is mechanically broken up, and the sulphuretted hydrogen set free by a series of fountains. The air of this room is constantly charged with an excess of sulphuretted hydrogen, and can be freely and safely inhaled. All the cases of catarrhal inflammation that I had an opportunity of watching received marked benefit from this mode of application. The beneficial effects, I think, result from the following causes: first, the steam spray softens and relaxes the inflamed mucous surfaces; second, the compressed air spray cleanses and stimulates to a healthy action the surfaces with which it comes in contact; third, the breathing of air charged with sulphuretted hydrogen gas has an anodyne and somewhat narcotic effect. Physicians who are in the habit of using the spray frequently have added to the sulphur some medication, as benzoic and boracic acids; some preparations of the pine, as the extract or oil made from the needles or leaves of the pine, such as are used so largely in Germany in similar affections. The object that I have in view in writing the above is to stimulate a more thorough research into the medicinal properties of the almost numberless medicated springs in the United States, thereby enabling physicians intelligently to advise their patients in regard to the various springs, at the same time sparing them the many inconveniences of sea and continental travel, especially should they be lame or crippled.

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